

## **REMARKS**

### **I. Introduction**

Claims 5 and 6 are pending in the present application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

### **II. Rejections of Claims 5 and 6 Under 35 U.S.C. § 103(a)**

Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 4,275,339 ("Burke et al."). Applicants respectfully submit that Burke et al. do not render claims 5 and 6 unpatentable for the following reasons.

Claim 5 relates to an electronically commutable motor. Claim 5 recites a plurality of excitation windings having a common magnetic circuit and a corresponding plurality of power semiconductor output stages, the output stages including low-side-connected N-channel MOSFETs. Claim 5 also recites that each of the excitation windings is connected in a series circuit integrally with a respective one of the MOSFETs, the excitation windings being connected to a common direct-current supply voltage, and the excitation windings being energized successively in a commutation cycle and being situated alternately in opposite directions into the series circuits with the MOSFETs. Claim 5 further recites that in the context of more than two excitation windings, the commutation cycle extends over an even number of successive, alternately oppositely polarized excitation windings. Claim 5 further recites that in associated commutation phases, the MOSFETs are driven fully into a conductive state with uniform control signals. Claim 5 still further recites a smoothing capacitor connected in parallel to the series circuits of the MOSFETs and windings between the voltage and ground for transferring back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding.

Applicants respectfully submit that Burke et al. do not disclose or suggest all of the features of claim 5. Burke et al. provide transistors P1, P2, P3 and P4 which are each connected to a parallel combination of a transistor and a diode. The transistors T1 to T4 are protected against overvoltages during switchoff by diodes 45 connected in parallel to the transistors. The configuration provided in claim 5, however,

eliminates the need for diodes by providing a configuration where potentially excessively high energy is transferred from an exciter winding to an adjacently located exciter winding.

Burke et al. do not disclose or suggest windings between the voltage and ground for transferring back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding. Burke et al. are silent regarding this configuration. Burke et al. instead, use the diodes to prevent energy flow and therefore the windings do not transfer energy in a transformer fashion upon a disconnection of the excitation windings to a respectively next energizable excitation winding. Burke et al., therefore, do not disclose or suggest the features of claim 5.

Claim 6 relates to an electronically commutable motor. Claim 6 recites the features of a plurality of excitation windings having a common magnetic circuit and a corresponding plurality of power semiconductor output stages, the output stages including low-side-connected N-channel MOSFETs. Claim 6 recites that each of excitation windings is connected in a series circuit integrally with a respective one of the MOSFETs, the excitation windings connected to a common direct-current supply voltage, the excitation windings energizable successively in a commutation cycle and arranged alternately in opposite directions into the series circuits with the MOSFETs. Claim 6 also recites that in the context of more than two excitation windings, the commutation cycle extends over an even number of successive, alternately oppositely polarized excitation windings, in associated commutation phases, the MOSFETs drivable fully into a conductive state with uniform control signals. Claim 6 also recites a smoothing capacitor connected in parallel to the series circuits of the MOSFETs and windings between the voltage and ground arranged to transfer back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding.

As provided above, Burke et al. do not disclose or even suggest a configuration wherein windings between the voltage and ground are arranged to transfer back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the

excitation windings, to a respectively next energizable excitation winding. Burke et al., therefore, do not disclose or suggest the features of claim 6.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As indicated above, the reference does not disclose, or even suggest, all of the limitations of claim 5 or claim 6. It is therefore respectfully submitted that the reference does not render obvious claim 5 or claim 6.

Moreover, it is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Final Office Action's generalized assertions that it would have been obvious to modify or combine the references do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .

**Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .

**Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the present Final Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Accordingly, the Office must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not the case here -- there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed," stating that:

In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in

the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings.

In view of the foregoing, it is respectfully submitted that Burke et al. do not render obvious claims 5 and 6.

Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Burke et al. and U.S. Patent No. 4,347,464 ("Park et al."). Applicants respectfully submit that the combination of Burke et al. and Park et al. does not render claims 5 and 6 unpatentable for the following reasons.

The addition of Park et al. does not cure the critical deficiencies of Burke et al. Park et al. allegedly relate to a FET motor drive system. Park et al. provide windings 7, 9, 11 and 13. Polarities for windings 7, 9, 11 and 13 are indicated by the dots depicted in Figure 1. The polarities of the windings, therefore, are in a consistent direction and are not arranged such that the windings between the voltage and ground are arranged to transfer back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding. Park et al., similar to Burke et al., use diodes to attempt to cut off voltage from affecting the MOSFETS Q1 to Q4 respectively. Park et al. are not configured such that windings between the voltage and ground are arranged to transfer back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding as Park et al. do not transfer energy between windings similar to claims 5 and 6. Park et al. merely provide the windings 7, 9, as well as associated components, and windings 11 and 13 as well as associated components, to drive a motor according to shaft speed. Applicants respectfully submit that the Park et al. arrangement is characteristically different than the configurations in claims 5 and 6 where Park et al. merely attempt to drive a motor system using

magnetic flux, while the configurations in claims 5 and 6 actually transfer energy between windings.

Applicants respectfully submit that the combination of Burke et al. and Park et al. does not disclose or suggest the features of claims 5 and 6. Applicants respectfully request withdrawal of this rejection.

Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as unpatentable over Park et al. in view of any one of Burke et al., U.S. Patent 3,684,934 ("Loyzim"), U.S. Patent 5,291,115 ("Ehsani") or U.S. Patent No. 5,844,343 ("Horst"). Applicants respectfully submit that the combination of Park et al. and any of Burke et al., Loyzim, Ehsani or Horst does not render claims 5 and 6 unpatentable for the following reasons.

Applicants respectfully submit that, as provided above, the combination of Park et al. and Burke et al. does not disclose or suggest the features of claims 5 and 6.

The addition of Loyzim does not cure the critical deficiencies of Park et al. Loyzim allegedly relates to a stepping motor drive circuit with path for induced voltages. Loyzim does not disclose or suggest that the windings between the voltage and ground are arranged to transfer back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding. Loyzim provides a motor power supply 13 which provides power to a stepping motor 11. Four individual sections of windings are presented in the motor 11. Loyzim always charges the stepping motor 11 such that one coil on each pole is energized at all times. Col. 3, lines 33 to 40. Loyzim always provides that the motor power supply has a negative terminal 23. Moreover, Loyzim also provides diode pairs 22, 36 and 24, 32 and individual diodes 29, 33, 34 and 35 such that current flow is maintained in a specified direction. Loyzim does not allow for any configuration which provides a countercurrent direction for a disconnection energy transferred in a transformer fashion.

Applicants respectfully submit that the combination of Park et al. and Loyzim does not render obvious claims 5 and 6.

Applicants further respectfully submit that the combination of Park et al. and Ehsani does not disclose or suggest the features of claims 5 and 6. Ehsani allegedly relates to a method and apparatus for sensing the rotor position of a switched

reluctance motor without a shaft position sensor. As provided in Figure 3, a capacitor C is placed in parallel to four individual phases of a switched reluctance motor. Ehsani does not disclose or suggest a smoothing capacitor connected in parallel to the series circuits of the MOSFETs and windings between the voltage and ground arranged to transfer back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding. Ehsani is silent with regard to stator coils L1 to L4 having any configuration where a disconnection energy is transferred in a transformer fashion upon disconnection of an excitation winding to a respectively next energizable excitation winding.

Applicants respectfully submit that the combination of Park et al. and Ehsani does not render obvious claims 5 and 6.

Applicants also submit that the combination of Park et al. and Horst does not disclose or suggest the features of claims 5 and 6. Horst allegedly relates to a auxiliary starting switched reluctance motor. The Office Action merely alleges that Horst provides a capacitor C1 connected in parallel to a winding of a MOSFET series circuit in parallel to a power source 42. Horst provides the capacitor C1 in a parallel relationship to windings 28a, 28b and 20, 21. Windings 20 and 21, for example, are coupled to a drive circuit to return stored energy back to a DC buss when the winding is de-energized. Applicants respectfully submit, however, that Horst does not disclose or suggest a configuration of a smoothing capacitor connected in parallel to the series circuits of the MOSFETs and windings between the voltage and ground for transferring back, in a countercurrent direction to the direct-current supply voltage, a disconnection energy transferred in a transformer fashion, upon disconnection of the excitation windings, to a respectively next energizable excitation winding. Horst is silent with regards to transferring a disconnection energy in a transformer fashion upon disconnection of the excitation windings to a respectively next energizable excitation winding as Horst does not present this configuration.

Applicants respectfully submit that the combination of Park et al. and Horst does not render obvious claims 5 and 6.

For the reasons provided above, Applicants respectfully submit that the rejections should be withdrawn.

As regards the allegations of well-known fact, Applicants respectfully traverse these contentions to the extent that they are maintained and request that the Examiner provide specific evidence to establish those assertions and/or contentions under 37 C.F.R. § 1.104(d)(2) or otherwise. In particular, it is respectfully requested that the Examiner provide an affidavit and/or that the Examiner provide published information concerning these assertions. This is because this rejection is apparently being based on assertions that draw on facts within the personal knowledge of the Examiner, since no support was provided for these otherwise conclusory and unsupported assertions. (See also M.P.E.P. § 2144.03).

Moreover, judicial or official notice that is based on subjective and unsupported reasoning will not sustain an obviousness rejection. In the M.P.E.P. cited case of In re Ahlert, 165 U.S.P.Q. 418, 420 to 421 (C.C.P.A. 1970), the Court made plain that:

Assertions of technical facts in areas of esoteric technology must always be supported by citation to some reference work recognized as standard in the pertinent art and the appellant given, in the Patent Office, the opportunity to challenge the correctness of the assertion or the notoriety or repute of the cited reference. **Allegations concerning specific “knowledge” of the prior art, which might be peculiar to a particular art should also be supported and the appellant similarly given the opportunity to make a challenge.**

In re Ahlert, 165 U.S.P.Q. at 420 to 421 (citations omitted).

Otherwise, if the Examiner cannot provide either references or an affidavit to support these contentions, it is respectfully requested that the rejections of the claims under 35 U.S.C. § 103 be withdrawn for this reason alone.

### **III. Supplemental Information Disclosure Statement**

Applicants herewith provide a Supplemental Information Disclosure Statement and PTO 1449 for consideration by the Examiner.



IV. Conclusion

It is respectfully submitted that all pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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Dated: 4/19/04

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